Laparoscopic Radical Prostatectomy in Songklanagarind Hospital: First Series from Southern Thailand

Watid Karnjanawanichkul MD*,
Monthira Tanthanuch MD*, Choosak Pripatnanont MD*

** Division of Urology, Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla, Thailand*

Objective: *To describe our technique of laparoscopic radical prostatectomy (LRP) and evaluated outcome during the first year experience in Songklanagarind Hospital.*
Material and Method: *Between August 2011 and October 2012, sixteen patients of localized prostate cancer underwent LRP in Songklanagarind Hospital and were evaluated. The authors used five ports and conducted with an extraperitoneal approach. Patient characteristics, operative outcome, and pathological outcomes were analyzed.*
Results: *The average age of patients was 66.8 years and average prostate-specific antigen (PSA) value was 14.9 ng/ml. The average operative time was 437 minutes and average blood loss was 1,696 ml. One unit of transfusion was required in most patients. Hospital stay on average was 11 days and average catheter time was 27 days. Maximal weight of prostate was 93 grams. Pathological report demonstrated pT2, pT3 in eleven (69%) and five (31%) patients, respectively. Gleason score of seven was presented in the most of the cases. None of the patients had lymph node metastasis. At average follow-up time of 8.4 months, serum PSA was less than 0.02 ng/ml in 75% and complete continence in nine patients.*
Conclusion: *Laparoscopic radical prostatectomy is safe and feasible in initial experience surgeon.*

Keywords: *Prostate cancer, Laparoscopic radical prostatectomy, Extraperitoneal*

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Radical prostatectomy was a response as standard treatment for clinical localized prostate cancer. With traditional open surgery, the patients suffer from large incisions and prolonged convalescence period. Schuessler[1] reported the first series of LRP in 1997 with the outcome as expected e.g. less blood loss and transfusion, short recovery period, decrease incontinence and lower stricture rate. Now, the minimally invasive concept makes laparoscopic radical prostatectomy (LRP) becomes a standard treatment and has replaced open surgery with comparable outcomes such as reduced blood loss and safe early catheter removal. Guazzoni[2] was concluded that, the laparoscopic procedure proved to be safe oncologically and long-term follow-up is required to compare functional results in terms of continence and potency.

Inside the LRP technique, two ways of approach were described by either transperitoneal or extraperitoneal[3-6]. With advantages prefer extraperioneal route such as less incidence of bowel injury, stable hemodynamic and ventilation because it is away from a steep trendelenburg position, clear operative field despite less space but the bowel cannot obscure working room. Finally, it is easy to manage a postoperative urine leak from anastomosis if present. Here, the authors present our early experience of LRP in Songklanagarind Hospital. To our knowledge, this is the first series of LRP report from southern Thailand.

Correspondence to:
Karnjanawanichkul W, Division of Urology, Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla 90110, Thailand.
Phone: 074-451-428, Fax: 074-429-384
E-mail: watid.k@psu.ac.th

Material and Method

After the study was approved by the ethics committee, the authors retrospectively reviewed patients with localized prostate cancer who underwent laparoscopic radical prostatectomy in Songklanagarind Hospital. The Stolzenburg[7] techniques, with some modifications, are briefly summarized. With the patient under general anesthesia, the patient was placed in a supine position with a 10 to 15° head down tilt. A Foley catheter and a NG tube were inserted, infra-umbilical incision for camera port (ten millimeters trocar) was created, and incision of the anterior rectus sheath. Blunt dissection of preperitoneal space and a balloon dissector was introduced. Then inflated to create space,

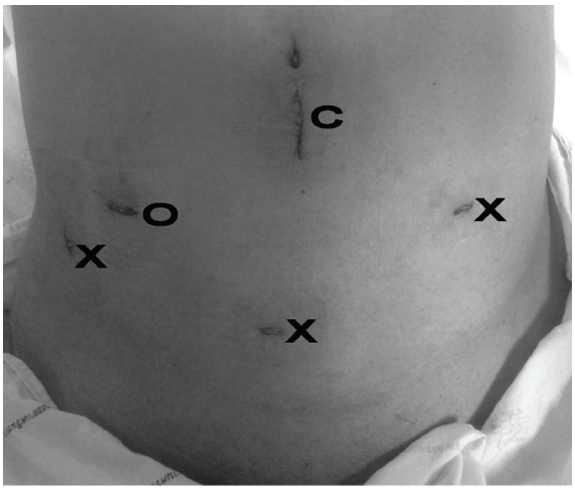

Fig. 1 Trocars placement in Five-port. Ten millimeters camera trocar (C) with extended wound. O, 10 mm working trocar. X, 5 mm trocars. Assistant works with 2 right lower quadrant ports.

trocar was exchanged for optical trocar (Hasson type). The gas flow was initiated and a second 5 mm trocar (working trocar) was placed one handbreadth left lateral to midline and third 10 mm trocar in mirror image with the previous one. The fourth 5 mm trocar was placed in the right lower quadrant two fingers breadth superomedially to anterior-superior iliac spine. The last 5 mm trocar placed in midline between camera trocar and pubic symphysis and all positions of trocar were shown in Fig. 1. Start the operation with bilateral pelvic lymphadenectomy in case of prostate-specific antigen (PSA) more than 10 ng/ml and used these anatomical boundaries: Cranial border at bifurcation of common iliac artery, lateral at iliac vessels, medial at medial umbilical ligament and caudal at pubic bone with obturator nerve as posterior border. Periprostatic fat was gently swept away and endopelvic fascia was incised at both sides exposing the fibers of levator ani muscle. Puboprostatic ligaments were transected sharply and Santorini plexus was ligated with 2-0 Vicryl suture, CT 1 needle by passing of the needle underneath the plexus from right to left. Dissection of bladder neck at anterior by helping with traction of Foley catheter to identify the junction between the prostate and bladder neck. The dissection was continued to lateral and completely separated at dorsal border. Then continue dissected between prostate and bladder neck in 30-degree angle caudally. After this step, the anatomical landmarks of the ampullae and the seminal vesicles are seen. Transected both vas deferens and ligate with polymer self-locking (Hem-o-lok) clip. The seminal vesicles were identified laterally and complete dissected. Retract prostate away from rectum and continued dissection towards to the apex of the prostate. Prostatic pedicles were ligated with clips and transected. At prostatic apex, urethra was sharply transected, starting at anterior part, and avoiding used of coagulation. Removed catheter and then completely transected urethra. After the prostate gland was free and moved to the cranial part, vesico-urethral anastomosis was performed by using 2-0 vicryl sutures with a UR6 needle with interrupted fashion. Before tying the last couple of anterior stitches, we passed a Foley catheter and indwelled with 12 ml balloon. The water-tightness of the anastomosis was checked by filling the bladder with 150 ml of normal saline. At the end of the procedure, a close suction drainage catheter was placed into retropubic space and removed when contents were less than 50 ml/day then the patient was discharged. Normally, the authors keep a Foley catheter in for three weeks and later it is removed at the out patient department.

Results

Between August 2011 and October 2012, LRP was performed on 16 patients and all the cases were approached with the extraperitoneal technique. The average age of patients was 66.8 years (range 57-80 years) and pre-operative PSA level on average was 14.9 ng/ml. Most of the cases (56.3%) have a PSA more than 10 ng/ml. The Gleason score was less than 7 in 37.5% of cases and all patient characteristics were in Table 1.

The average of operation time was 437 minutes (174 to 750 minutes). Two cases needed conversion, one with non-progressed and the other with rectal

Table 1. Patient characteristics (n = 16)

Age (years)	66.8 (57-80)
PSA (ng/ml)	14.9 (5.76-38.76)
PSA level (ng/ml)	Number of patient
4-10	7
>10	9
Clinical stage	
T2	11
T3	5
Gleason score	
<7	6
7	8
>7	2

PSA = prostate-specific antigen

injury at the end of apical resection. The average of estimate blood loss was 1,696 ml and less than average in the last couple of cases. The average of prostate volume was 44.5 g (24-93 g). Average catheterization time was 26.6 days. The average duration of drain time was 7.8 days (3-17 days). Length of hospital stay (LOS) was six to 22 days (Table 2). Postoperative complication was described as low grade (Clavien grade 1-2), which was due to anastomosis leakage and urinary tract infection without specific treatment was required. No pulmonary complication or deep venous thrombosis occurred.

The pathological report showed T2 disease in 11 patients and T3 in 31% of cases (Table 3). All lymph nodes were removed and were negative for malignancy. The surgical margin was positive in four cases with half of them having a PSA more than 20 ng/ml. With follow-up duration between seven and 68 weeks, the patient reaching PSA nadir at first laboratory postoperatively, was 12 patients (75%). The continence had a complete recovery in nine patients at average of 4.7 months postoperatively.

Discussion

Open radical prostatectomy has been accepted as standard treatment for clinical localized prostate cancer. Nowadays with minimally invasive concept developed, LRP has been increasingly performed and shows comparable outcome with the open technique. It has advantages in many parameters such as small scars, short convalescence period, decreased blood loss, and improved continence rate. The first laparoscopic radical prostatectomy (LRP) was performed in 1992 by Schuessler. It has been popular since 1998 and has gained a lot of attention in the urological community over the last decade[2,3]. In the early period, most studies used transperitoneal approach but the drawbacks were risk of bowel injury, urine leakage contained in peritoneal cavity, intraperitoneal adhesion formation, and cardiopulmonary problem from steep trendelenburg position. Because of these, the extraperitoneal approach was developed by Raboy in 1997[8].

The popularity of the extraperitoneal approach increased dramatically but it still has some weak points such as a small working space and increased tension at vesico-urethral anastomosis. Nevertheless, these are not major problems and several studies reported a better outcome with extraperitoneal LRP[4,9]. Siqueira Jr et al[10] reported LRP in learning curve surgeon and has seen more serious complication was occurring frequently in the transperitoneal approach because of intraperitoneal peritonitis. Most of reported cases changed from intraperitoneal to extraperitoneal route and they reported more cases performed with extraperitoneal technique[11,12]. The authors recommended using the extrapertioneal route in all cases despite the initial inexperienced of the surgeons. With the incidence of urine leakage occurring in up to 28% in LRP, some authors explained that it is from tension at the vesico-urethral anastomosis, especially in extraperitoneal approach. The solution was to perform anastomosis in running sutures and filling the bladder with a volume of 200 ml at the end of the procedure to rule out anastomosis leakage[10]. From the present study, the authors also performed anastomosis with a continuous running stitch in the last couple of cases and the authors normally filled the bladder with 150 ml of saline for leakage testing. In the present study, the mean operative time and blood loss were a little higher than reported in most learning curve periods, which may be due to our early report and less number of cases than others studies. In those studies, they had 40 from Siqueira Jr[10], 100 from Rodriguez[13], and 70 patients by Starling[14].

The surgical margin status is one of prognosis factors for biochemical recurrence, which reports 16.1% and 34.6% for pT2 and pT3 cancer respectively[15]. In the learning curve period, the positive margin rate in the present study was 25% and not different from previous reports[10,16]. However, when considered only in pathological T2 disease, the

Table 2. Perioperative data

Operative time (min)	437 (174-750)
Estimate blood loss (ml)	1,696 (200-3,600)
Transfusion (n)/ one unit transfusion (n)	14 (8)
LOS (days)	11 (6-22)
Drain time (days)	7.8 (3-17)
Catheter time (days)	26.6 (6-49)

LOS = length of hospital stay

Table 3. Pathological results

Pathological stage/positive surgical margin	Number	Percent
T2	11/1	69/9
T3	5/3	31/60
Negative lymph node status	9	100

positive margin rate in the present study was 9% and less than average of usual. Significant difference in positive margin rates required 200 cases to be apparent, as reported by Rodriguez et al[13]. The average of prostate size was 44.5 grams, which is comparable to previous reports[12]. With maximum weight of prostate in the present study was 93 grams and the operation was successful. The size of prostate does not prohibit inexperienced surgeon from laparoscopic radical prostatectomy. No wound complication, intraoperative cardiovascular problem, or bladder injury was encountered. One of the patients had a high PSA with severe adhesion. This caused rectal injury at the end of the procedure. Successfully rectal repair was done by consulting with a colorectal surgeon and the patient was doing well in the postoperative period. With the frequency of rectal injury (1.8-6%) during apical dissection, some delay was explained from the necrosis by using Harmonic device. Invisible thermal injury was responsible for this situation and the solution was to replace other thermal devices with cold shears instruments[10].

A short period follow-up demonstrated acceptable outcome with PSA nadir in 75% of cases. Potential disadvantages are the complexity of the surgical technique and the considerable learning curve associated with this procedure.

Conclusion

Laparoscopic radical prostatectomy is now competing with open technique and this preliminary result shows several advantages of operative parameters. Longer follow-up is needed for more evaluation.

Potential conflicts of interest

None.

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การผ่าตัดส่องกล้องเพื่อรักษามะเร็งต่อมลูกหมากโดยวิธีผ่านช่องนอกเยื่อบุผนังช่องท้องในโรงพยาบาลสงขลานครินทร์: รายงานฉบับแรกจากภาคใต้

วาทิต กาญจนวนิชกุล, มณฑิรา ตัณฑนุช, ชูศักดิ์ ปริพัฒนานนท์

วัตถุประสงค์: *เพื่อรายงานวิธีการและผลการผ่าตัดส่องกล้องรักษามะเร็งต่อมลูกหมากในโรงพยาบาลสงขลานครินทร์ ในช่วงระยะเวลาหนึ่งปีแรกของการผ่าตัดด้วยวิธีนี้*

วัสดุและวิธีการ: *ตั้งแต่เดือนสิงหาคม พ.ศ. 2554 ถึง เดือนตุลาคม พ.ศ. 2555 ผู้นิพนธ์ได้เก็บข้อมูลรายละเอียดของผู้ป่วยที่ได้รับการวินิจฉัยมะเร็งต่อมลูกหมากและรักษาด้วยวิธีการผ่าตัดแบบส่องกล้อง โดยวิธีผ่านช่องนอกเยื่อบุช่องท้อง ซึ่งมีจำนวนทั้งสิ้น 16 ราย การผ่าตัดทำโดยการใช้ช่องผ่าตัดจำนวน 5 แผล โดยนำข้อมูลมาวิเคราะห์ในด้านของเวลาที่ใช้ในการผ่าตัด ปริมาณการเสียเลือด ระยะเวลาที่ใช้พักรักษาตัวในโรงพยาบาล ระยะเวลาการใส่สายระบายและสายสวนปัสสาวะ และผลของการตรวจทางพยาธิวิทยา*

ผลการศึกษา: *อายุเฉลี่ยของผู้ป่วยคือ 66.8 ปี และมีค่าเฉลี่ยของผลเลือด PSA เท่ากับ 14.9 นาโนกรัม/มิลลิลิตร ระยะเวลาเฉลี่ยในการผ่าตัดเท่ากับ 437 นาที และมีการเสียเลือดโดยประมาณเท่ากับ 1,696 มิลลิลิตร และเพื่อทดแทนการเสียเลือด ผู้ป่วยส่วนใหญ่ได้รับเลือดทดแทนในปริมาณ 1 หน่วย ระยะเวลาของการรักษาในโรงพยาบาลเท่ากับ 11 วัน และค่าเฉลี่ยของการใส่สายสวนปัสสาวะคือ 27 วัน ขนาดของต่อมลูกหมากมีความแตกต่างกันตั้งแต่ 24-93 กรัม ผลการตรวจทางพยาธิวิทยาพบว่าเป็นมะเร็งต่อมลูกหมากระยะที่สอง ร้อยละ 69 และระยะที่สาม ร้อยละ 31 และโดยมากความรุนแรงของระดับ Gleason เท่ากับ 7 ไม่มีผู้ป่วยรายใดพบว่ามีการกระจายไปที่ต่อมน้ำเหลืองจากการตรวจทางพยาธิวิทยา ระยะเวลาติดตามการรักษาเฉลี่ยที่ 8.4 เดือน พบว่าระดับของผลเลือด PSA ในระดับที่ต่ำกว่า 0.02 พบได้ ร้อยละ 75 และการกลั้นปัสสาวะกลับมาสู่ภาวะปกติได้ในผู้ป่วยจำนวน 9 ราย*

สรุป: *การรักษามะเร็งต่อมลูกหมากโดยการผ่าตัดแบบส่องกล้องด้วยวิธีผ่านช่องนอกเยื่อบุผนังช่องท้อง สามารถทำได้โดยมีความปลอดภัยแม้ในศัลยแพทย์ที่มีประสบการณ์เริ่มแรก*